

**SUPPRESSION OF THERMALLY ACTIVATED MAGNETIZATION
FLUCTUATIONS IN MAGNETORESISTIVE ELEMENTS VIA SPIN
MOMENTUM TRANSFER**

ABSTRACT OF THE DISCLOSURE

A system and method of reducing noise due to thermally activated spin waves in a magnetoresistive (MR) element is disclosed. The MR element includes a free layer, a reference layer, and a spacer layer, the spacer layer being positioned between the free layer and the reference layer. To reduce noise, a magnetization of the reference layer is pinned in a fixed direction. A spin polarized current perpendicular to a plane of the free layer, reference layer, and spacer layer is subsequently produced such that the current exerts a spin momentum transfer torque on localized electron spins to reduce noise due to thermally activated spin waves. The spin momentum transfer torque opposes the intrinsic damping of the free layer, thereby reducing noise in the MR element.